

# Leading by Example Council Meeting

July 19, 2016

# Agenda

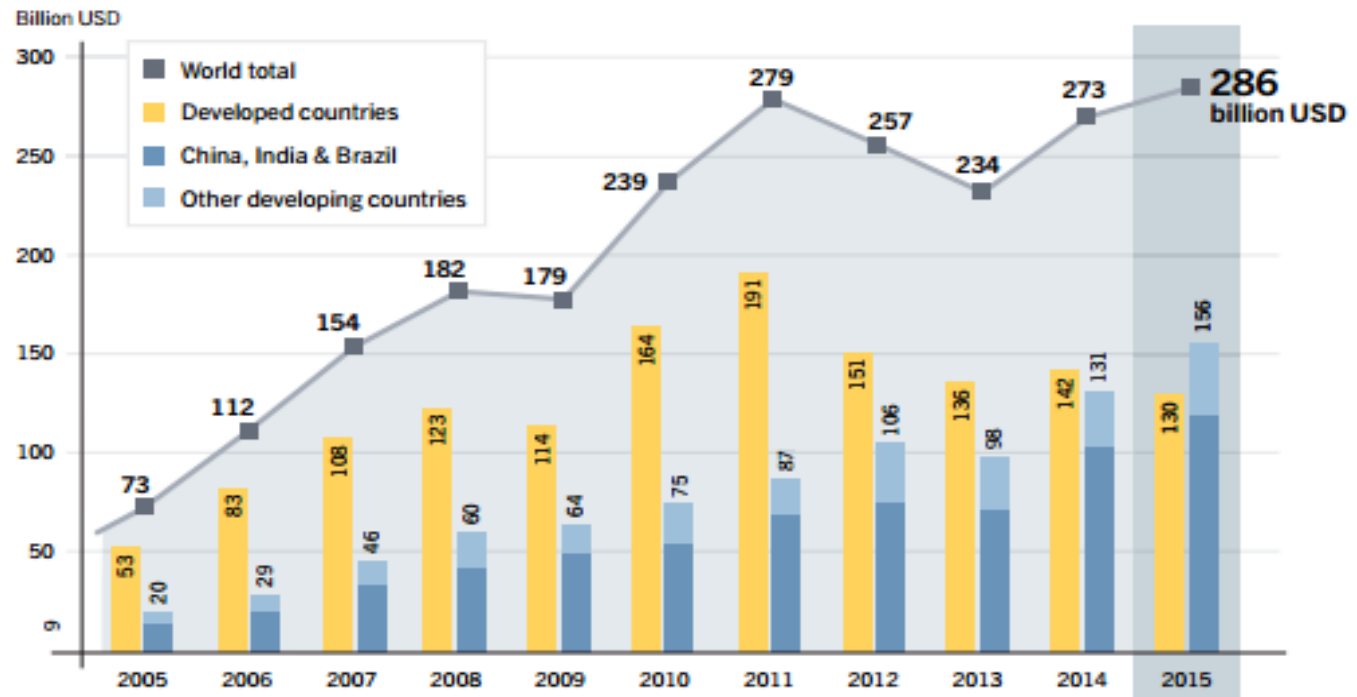
- Welcome & Introductions
- General Updates
- Solar Update
- Hot Water Technology Presentation
- LBE Partner Spotlight: UMass Lowell EV Charging
- LBE Updates
- Water Conservation and Discussion
- Events
- *Upcoming Council Meetings*
- *Building Tour*



# REN21 Renewables 2016 Global Status Report

- Record \$286 billion investment in renewables in 2015
- US: “Renewables accounted for nearly 13.7% of electricity generation (up from 13.4% in 2014), despite a 3.2% drop in hydropower output.”

**Figure 35.** Global New Investment in Renewable Power and Fuels, Developed, Emerging and Developing Countries, 2005-2015



Source: [Renewable Energy Policy Network for the 21st Century, 2016](#)

# SREC II Regulations

- Emergency SRECII Regulations filed in April official and in effect as of July 1
- Changes following public input process:
  - **Extension beyond Jan. 8, 2017** – 4 month extension to May 8, 2017 for projects that expend 50% construction costs by Jan. 8. Guidelines to follow later this year.
  - **Reducing SREC Factors** –
    - Lower SRECs for projects >25 kW needing construction extension
    - Reduced SREC Factor for all projects 25kW or less that come online after Jan. 8
    - Guidelines by end of August on reduced SREC values

[DOER SREC II Emergency Rulemaking Website](#)

*Creating A Clean, Affordable and Resilient Energy Future For the Commonwealth*



Massachusetts Department  
of Energy Resources

# Green Communities Grants

- 47 communities awarded \$9.5M in competitive grants
- Over \$80M in GC designation and competitive grants since 2010

## Projects include:

- Town/city-wide LED streetlight conversions in Ayer, Carlisle, Leominster, Maynard, Millbury, and Newburyport
- Also: heating system conversions, weatherization, electric vehicles, EV charging stations, and more



[EEA Press Release  
and list of  
municipalities](#)

# MA Receives Environmental Purchasing Awards

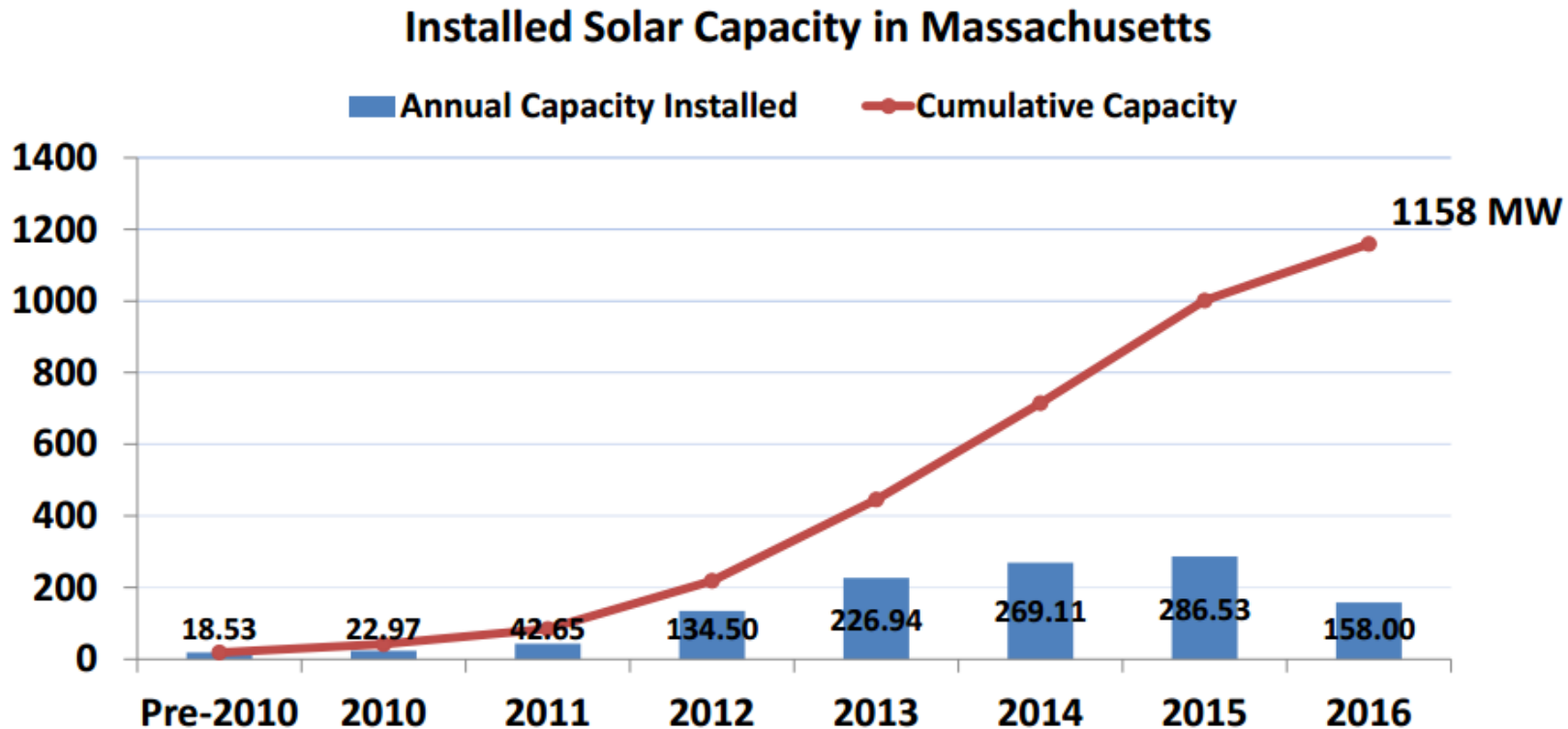
- OSD's EPP efforts earn national recognition
- 2-Star (out of 3) Electronic Product Environmental Assessment Tool (EPEAT) Award
  - MA energy-efficient electronic purchases (PCs, laptops, monitors) est. savings of over \$700,000 in energy cost savings in FY15
- Sustainable Purchasing Leadership Council (2 awards):
  - Business Case Award: for program that demonstrates the business value of a sustainable purchasing program (saved more than \$28M in FY15)
  - Award for nation's largest multi-state green cleaning SWC (FAC85)



Source: [OSD Buy the Way Newsletter](#)

# Solar Update

# MA Solar Progress

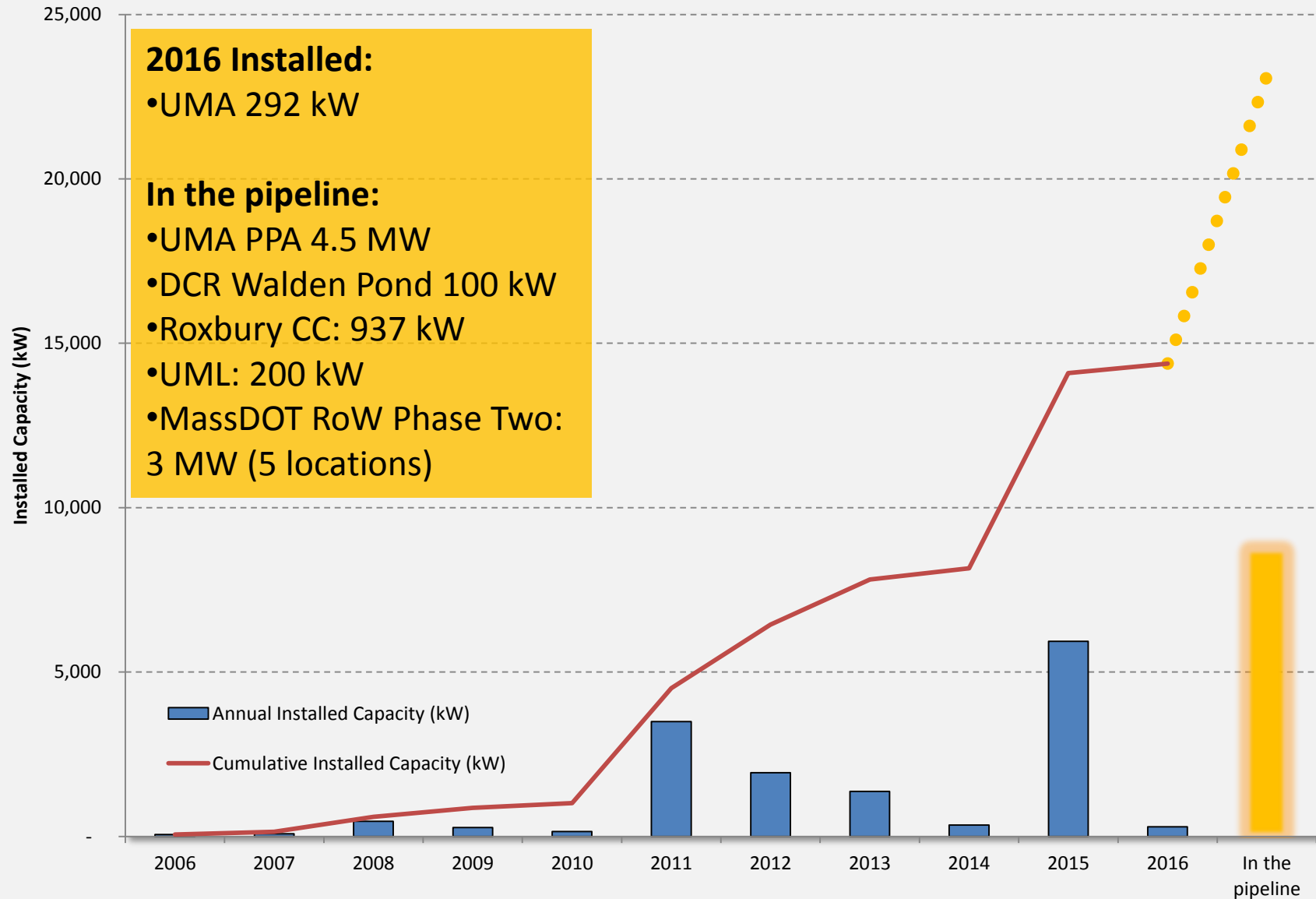


**Massachusetts has an aggressive target of 1600 MW of solar power installed for 2020. The above figures represent the cumulative amount installed as of May 2016 in 48,342 projects.**

*Creating a Clean, Affordable and Resilient Energy Future for the Commonwealth*



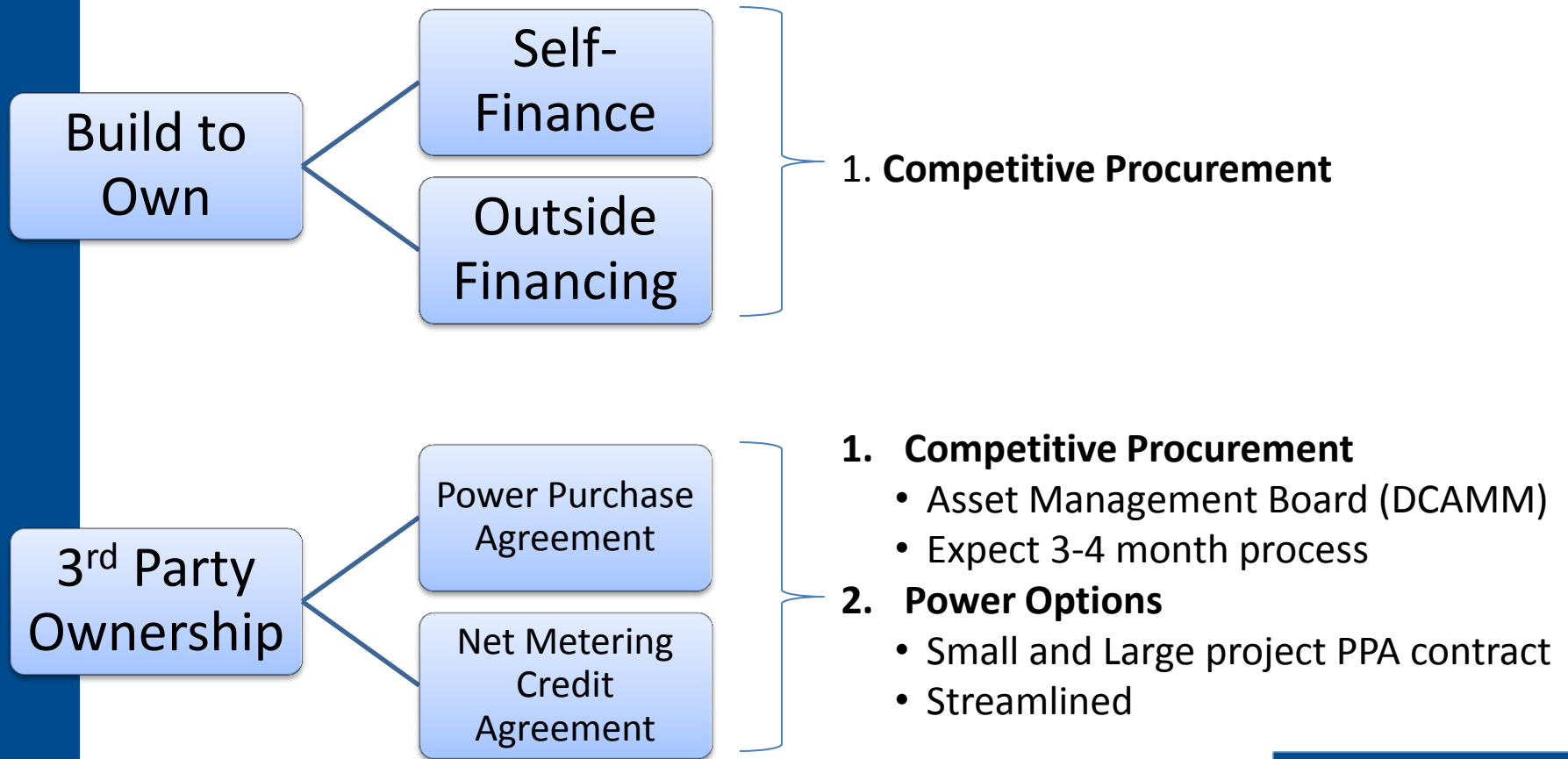
# LBE Solar Progress



# Solar Canopy Update

- **Through end of August:**
  - Remaining site visits
- **Fall 2016:**
  - DOER working with consultant and stakeholders on new solar incentive program
- **Late Winter/Early Spring 2017:**
  - New solar incentive program in place
- **Spring 2017**
  - LBE Grant Program issued

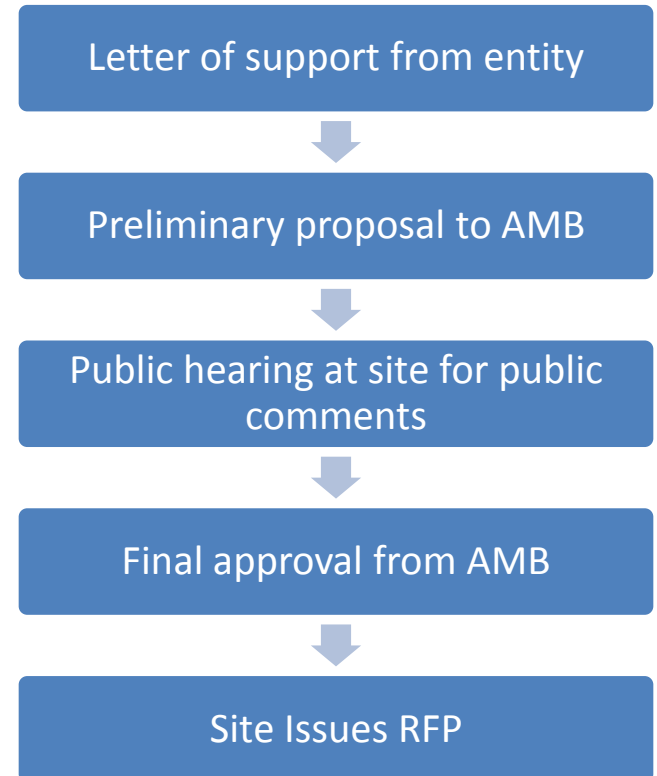
# Solar Canopy Procurement Options



# DCAMM PPA Approval: Process & Timeline

- Asset Management Board
  - 3 – 4 month process
  - Bi-Monthly Meetings
    - Next Meeting: July 19, 2016
      - Holyoke CC

Must  
happen  
w/in 12  
mos.



# Hot Water Technologies

# Hot Water Overview

- Goal to improve energy efficiency of water heating equipment in state buildings, focusing on smaller buildings
- Many state facilities have hot water heaters that are old, inefficient, and oversized
- Hot water heaters should be matched with a facility's demand to heat water when needed as efficiently as possible
- Many low cost and efficient hot water technologies exist

# Technologies



## Electric Mini Tankless POU

Small, light, unlimited hot water, cheap and quick to install



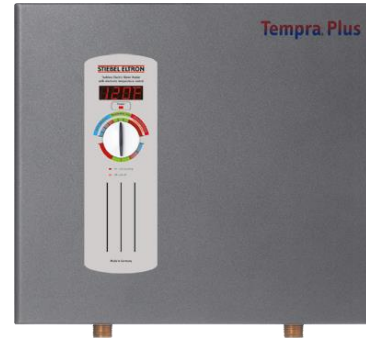
## Electric Mini-Tank POU

Small, light, cheap and quick to install (2.5-6gal)



## Electric Tankless POU

Unlimited hot water for versatile locations and uses



## Electric Whole House Tankless

Supplies hot water for the entire house



## Natural Gas Whole House Tankless

Supplies hotter water for the entire house with additional installation



## Air Source Heat Pump

Efficiently supplies hot water for large residences by using heat from ambient air

# Best Use



## Electric Mini Tankless POU

Demand at 1-2 bathroom sinks



## Electric Mini Tank POU

Small demand at bathroom or kitchen sinks



## Electric Tankless POU

Versatile demand for showers or utility sinks



## Electric Whole House Tankless

Warmer climate residences with few showers



## Natural Gas Whole House Tankless

Versatile hot water demand for residences



## Air Source Heat Pump

Large hot water demand for multiple families



# Summary

- Traditional water heating storage tanks can waste energy if infrequently used
- A variety of alternatives exists:
  - Electric or Gas
  - POU, Mini Tank, Whole House, Heat Pump
- Savings range from 15-80% depending on current equipment, water use, replacement technology
- Smaller demand equipment can be easier and less costly
- Some equipment can use 120v, some need 240v
- Electricity upgrades could be required
- Important to identify water consumption needs to match with best technology

**STIEBEL ELTRON**

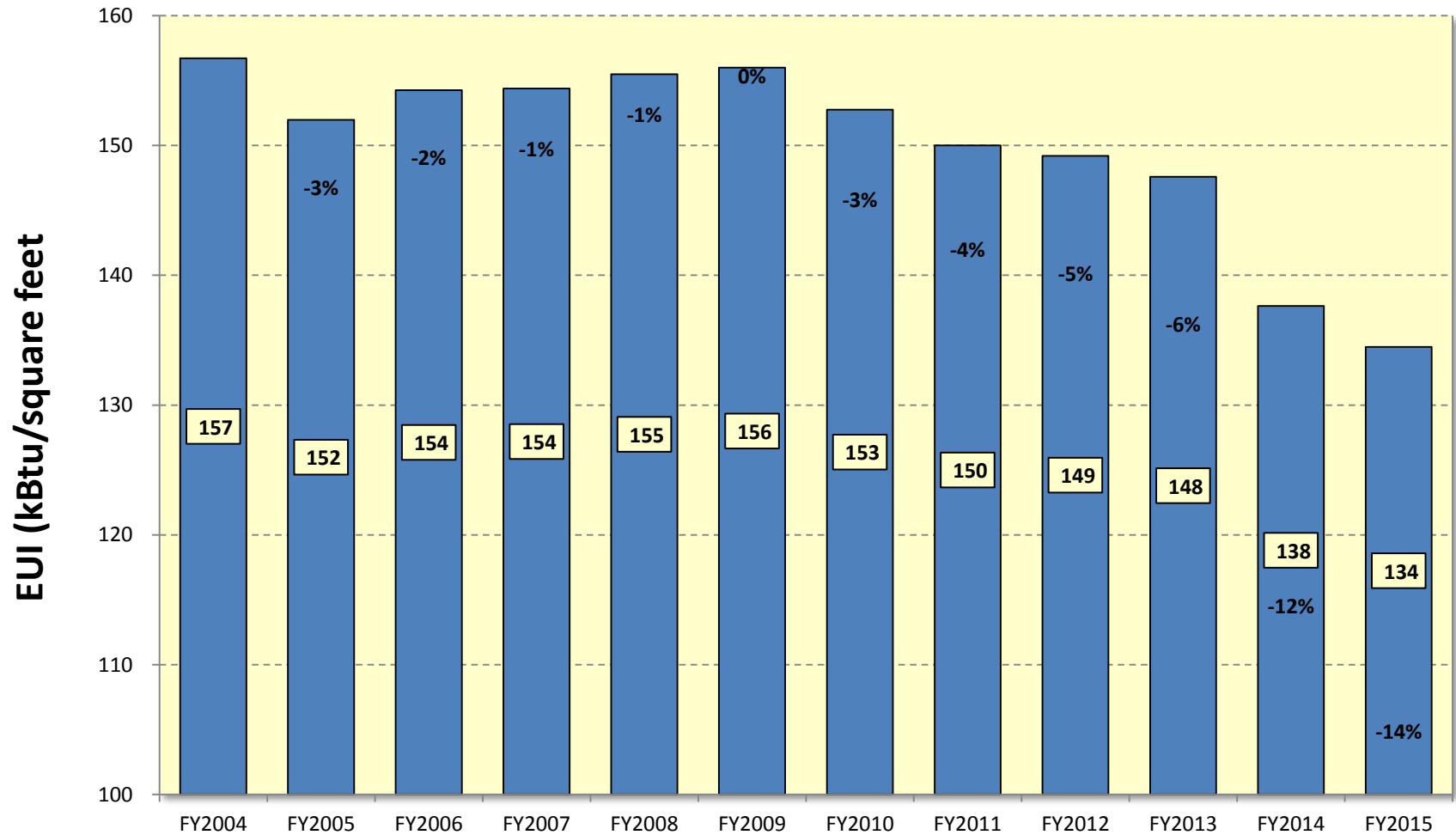
# **LBE Partner Spotlight:**

## **UMass Lowell EV Workplace Charging**

# LBE Updates

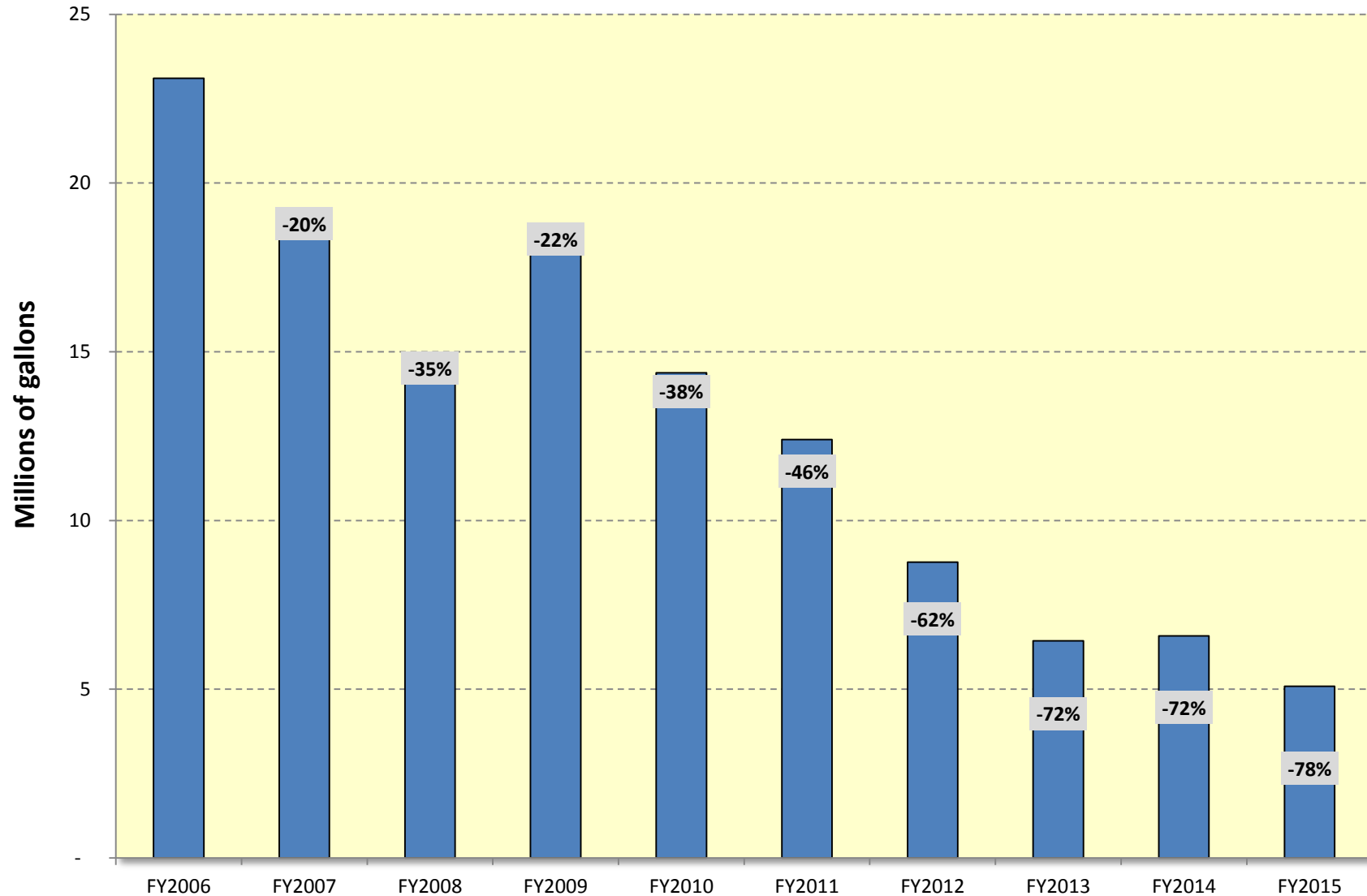
# Latest LBE Progress Data (FY15)

## Energy Usage Intensity



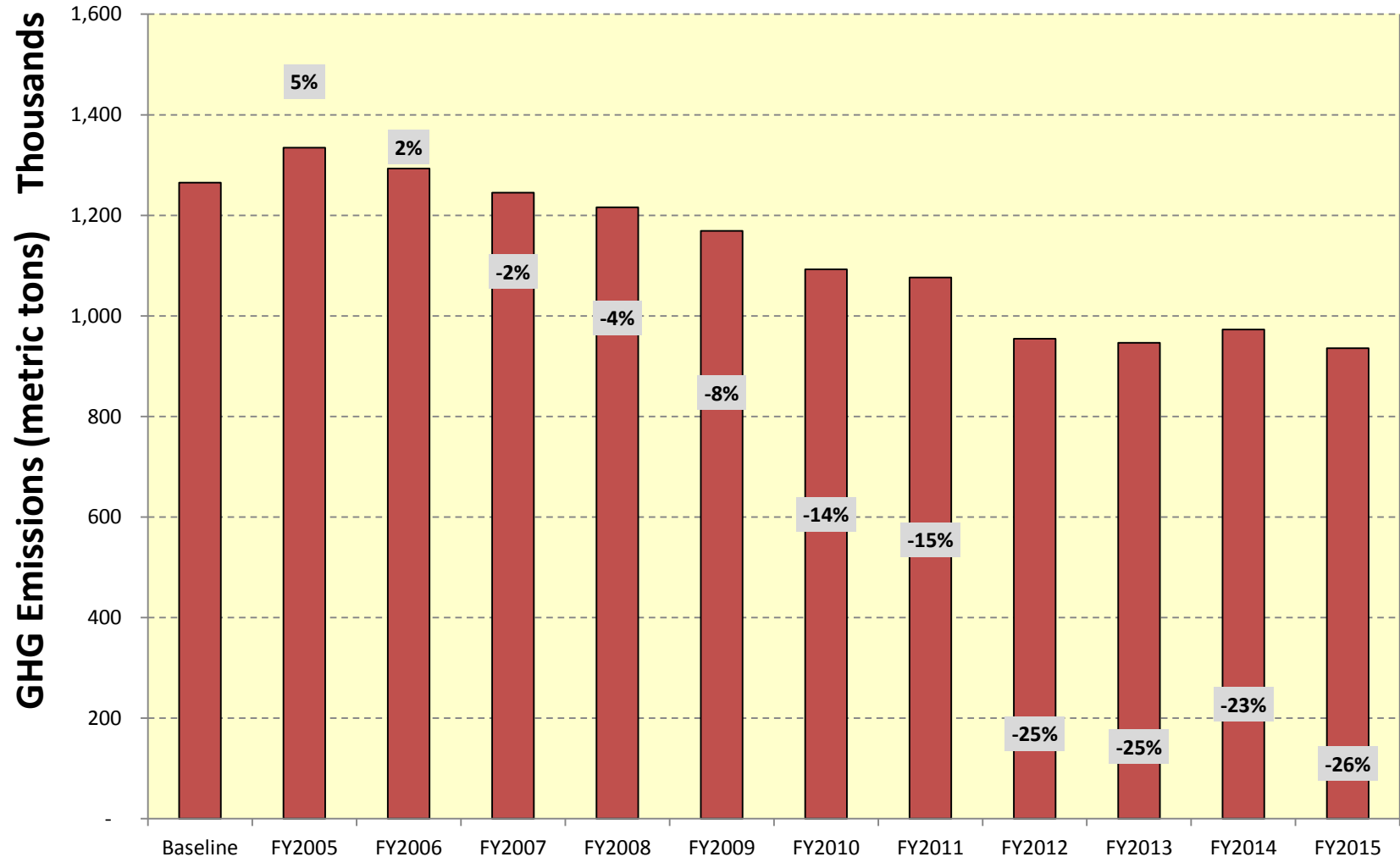
# Latest LBE Progress Data (FY15)

## Oil Consumption



# Latest LBE Progress Data (FY15)

## GHG Emission Reductions



# LBE Grant: Biomass at Blue Hills

- June 14: \$110,000 LBE Renewable Thermal Grant to DCR
  - Blue Hills State Reservation (Trailside Museum)
- Clean energy conversion to wood pellet boiler
- Part of larger DCAMM AEP comprehensive project
- Total annual cost savings: \$50,000
- Eliminates use of 5,000 gallons of heating oil annually

[EEA Press Release](#)

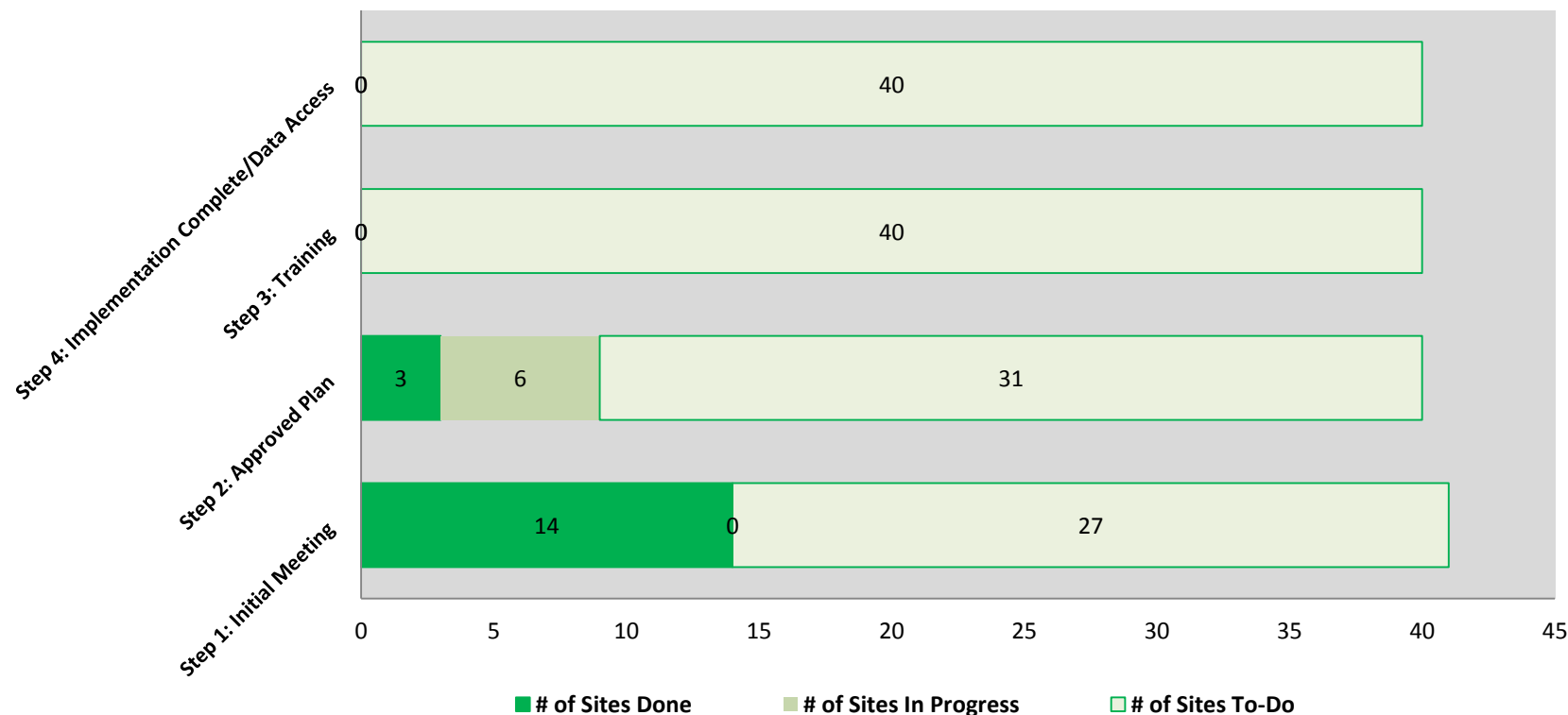


# VEH102: Advanced Vehicle Technologies, Equipment and Supplies

- **Technologies (Three Service Categories):**
  1. EV Charging Stations, Software and Services
  2. Idle Reduction Technologies  
(Light, Medium & Heavy Duty Vehicles & Equipment)
  3. After-Market Alt. Fuel Conversion Technologies  
(Light, Medium & Heavy Duty Vehicles)
- **Schedule:**
  - RFR Posted June 29
  - Vendor responses due Aug. 4
  - Estimated Contract Start Date: Sept. 15

# Commonwealth Building Energy Intelligence (CBEI) Updates

## CBEI Site-by-Site Implementation Status



## Implementation Plan by 12/31/16

1. Introductory Site Visits
2. Site-specific plans
3. Trainings at sites
4. Implementation/Data access

*Creating A Clean, Affordable and Resilient Energy Future For the Commonwealth*



Massachusetts Department  
of Energy Resources

# Sustainability Challenge

- Final draft prepared, in last approval stages
- Constructive and positive stakeholder feedback in beta test
- Added water conservation and grounds sustainability questions
- Improved waste/recycling and procurement questions

Sustainability Challenge Topics
Challenge #1: Lighting reduction strategies
Challenge #2: Reduce plug loads
Challenge #3: Implement Computer Power Management
Challenge #4: Create an effective operations and maintenance program
Challenge #5: Promote paper reduction strategies
Challenge #6: Establish recycling and waste reduction programs
Challenge #7: Implement Environmentally Preferable Purchasing Program
Challenge #8: Implement alternative transportation strategies
Challenge #9: Create environmental awareness
Challenge #10: Innovate

# 2016 LBE Awards Application

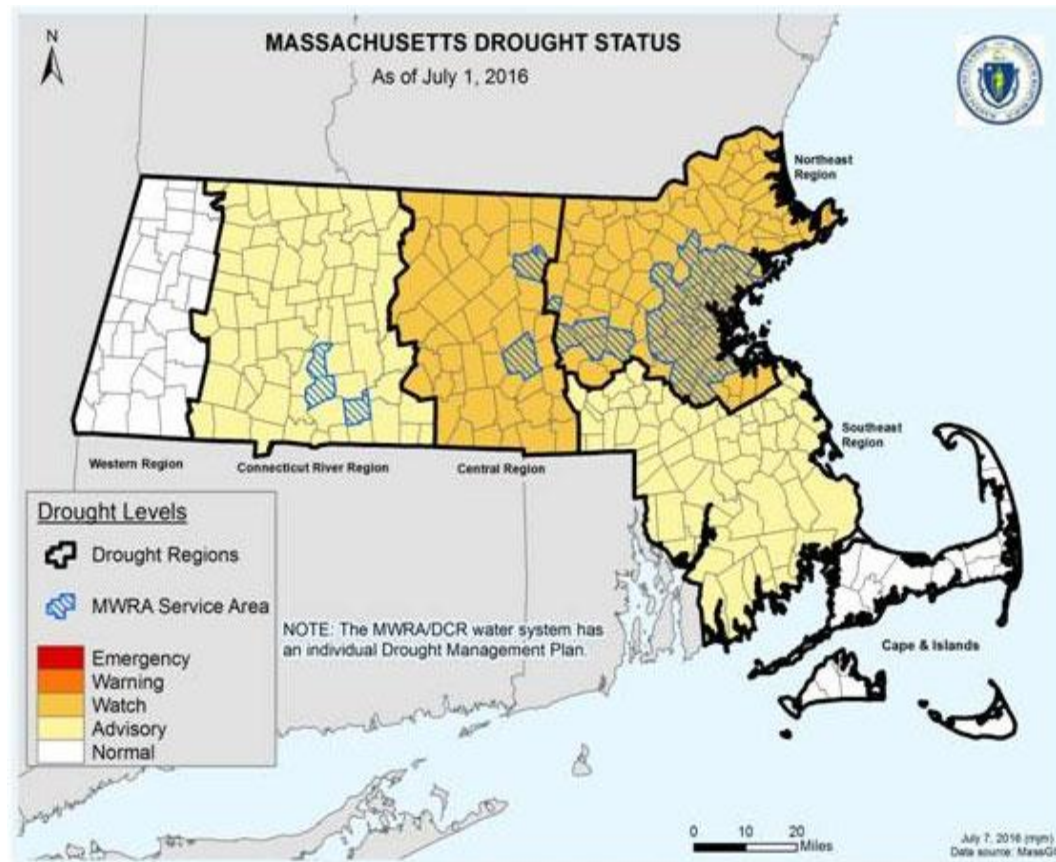
- Awards for energy and environmental achievements, for:
  - State Agencies (2)
  - Public Higher Ed. (2)
  - Municipalities (2)
  - Individuals (2)
- **2016 Application now available!**



Worcester State Univ., a 2015 Higher-Ed. Winner

# Water Conservation and Discussion

# Massachusetts Drought Conditions



[EEA Issued July 8](#)

Drought Advisory issued for Southeast and Conn. River Valley.  
Drought Watch issued for central and northeast Mass.

# Water Conservation Discussion

## *Outdoor*

- *What sustainable landscaping practices are in place at your agency/campus that conserve water?*
  - *Native species?*
  - *Moisture sensors for irrigation systems?*
  - *Rainwater harvesting?*
- *What other innovative water conservation solutions are in place?*

# Water Conservation Discussion

## *Indoor*

- *Have you installed low-flow fixtures (faucets, toilets, showerheads)?*
- *Do you distribute shower timers?*
- *Outreach campaign to report water leaks?*
- *Regular water leak detection audits scheduled?*
- *What other innovative water conservation solutions are in place?*



# Events

# Fish Hatchery/Hydro Project

- June 24 groundbreaking
- \$288,500 LBE Clean Energy Grant, same \$ from MassCEC
- Water pipeline eliminates pumping from river, reducing the Hatchery's electrical demand by 588,000 kWh annually.
- Approx. 60 kW hydro system in pipeline, producing 440,000 kWh of renewable energy annually
- [EEA Press Release](#)



# Bristol CC Zero Net Energy Lab

- July 14 ribbon-cutting event
- Over \$1 million in DOER LBE and Pathways to Zero grants
- Technologies:
  - Hybrid ASHP/GSHP system
  - Filtered fume hoods
- \$100,000/year energy savings, millions of dollars in savings over life of building
- Targeting LEED Platinum Certification
- Designed to meet Zero net energy



[Photo: BCC](#)



[Photo: Gov. Baker](#)



Massachusetts Department  
of Energy Resources

# UMass Amherst Solar Canopy Ribbon Cutting

- July 22 event
- 292 kW solar canopy
  - \$146,000 LBE Solar Canopy Grant
- CHP solar thermal
  - Pre-heats 50,000 condensate tank for CHP plant
  - \$74,718 LBE Grant





# DCR Walden Pond Visitor Center

- Ribbon-cutting: September 23
- Designed to zero net energy standard
- 100 kW solar canopy, ASHPs, solar HW system
- \$300,000 in LBE and DOER ZNE grants



Former Visitor Center



[Photo: EEA](#)

# CURC Webinar: Finding Solutions For Hard to Recycle Items

- College and University Recycling Coalition Webinar  
*Description: Success stories from campuses keeping non-traditional items out of the landfill*
  - August 11, 1-2:30pm, [register here](#)



# Upcoming Council Meetings

- September Meeting w/ DCAMM AEP
  - Tues. 9/13
- November Meeting Date Change
  - Was Tues. 11/8, **Now Tues. 11/15**